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Establishing a new pilot selection procedure for the Royal Netherlands Navy

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Many pilots and flight observers of the 7 Squadron, one of the helicopter squadrons of the naval air service of the Royal Netherlands Navy (RNN), often tell us the following story:

About fifteen years ago a pilot of a Lynx helicopter was about to land on the helicopter landing platform of a frigate. There was a fierce wind blowing and the sea was rather choppy. The usual procedure under such weather conditions is to keep the the ship in a geographically fixed position so that it lies more or less still, to give the pilot and the flight observer the possibility to land safely. This however, did not happen this time.

After the helicopter had 'hovered' above the frigate for quite a long time, the sea became somewhat calmer and the pilot decided to land. By then the captain thought that it had gone on long enough and he estimated that the pilot could land when the ship moved half speed ahead (for now the sea had become calmer). However, when the pilot had nearly landed, the ship accelerated. But when it gained speed it leaned sideways in the waves at the moment the helicopter nearly touched down. The pilot managed to steer away to the right and saved the aircraft.

With this story they try to explain two things:

1. Firstly that, according to the airmen, captains of frigates often underestimate how difficult it is to land a helicopter on the flight deck of a ship.
2. Secondly this story is meant to emphasize to outsiders how well-trained the crew of these helicopters have to be.

In the RNN we find it of course very important that our helicopter crews as well as the Orion crews are trained well and that they can cooperate closely. Therefore we try to coach them in the best possible way and we try to attune the experiences of instructors and those who select the new candidates to each other, in order to come to a good selection procedure and a profitable interchange of experiences.

In the past year we thus have come to a reviewed psychological selection system for the jobs in the naval air service. In this lecture I would like to give a few more details about the new method. In view of the limited time, I am confining myself to the jobs of the pilots of the Lynx and the Orion.

For an appointment as airman in the RNN we know two kinds of psychological test procedures: the basic psychological test procedure and the additional psychological tests. All applicants for a career in the RNN are put through the basic psychological test procedure. It consists of an interview and a number of question lists on personality traits and abilities. For those who have to work under stress more frequently than others in the RNN there are additional tests. For instance for divers, crews of submarines, security service, fire brigade and personnel of the naval air service.

Until about 18 months ago the Medical Division was responsible for the contents of the psychological tests. Since then however this responsibility lies with the psychologists of the department of Socio-scientific Research (SWO), where I work. Since then we keep a close eye on the quality of the tests together with the executive selectors and we are responsible for the 'test-limits' (as we were already for the basic psychological tests).

We decided to have a closer look at the various current selection methods, in particular those for the pilots, to look if and where improvements in the form of additions or replacements were needed in the psychological

selection procedures. We started with the pilots, because there were long waiting lists for this test and there was a high percentage of drop-outs during the training.

To be able to decide what items of the procedure need improvement, it is important to know which qualities are important to be able to function in one of the airmen jobs. To arrive at the relevant qualities you need information from practice. We departed from the idea that experienced airmen know what features are the most important to be able to do their job. In addition the instructors notice who is going to pass and who is not during the training. From experience they can give a good indication of what could be the reasons for the failure of a 'drop-out'.

Therefore we started the working groups 'Airmen and Selection/Lynx and Airmen and Selection/Orion', with the aim to come to good up-to-date job profiles for the range of jobs in the naval air service. In addition to a number of selection psychologists of the Selection Centre and the department of SWO, experienced airmen were engaged in this project. Representatives of various jobs related to flying the Lynx and Orion, such as pilots, technical coordinators (tacco's), sensor operators, flight engineers, avionics engineers and helicopter rescuers participated in these working groups. They brought up some specific personality traits that are to a greater or lesser extent important for an airman to function properly. Thus we arrived at an interim job profile. This job profile was evaluated (and slightly changed) by over sixty other airmen. On the basis of the final job profile we adapted the new psychological selection method.

The members of the working group did not distinguish greatly between the abilities or personality traits required for Orion and Lynx aircrews respectively. The only difference that many of them mentioned, is that a Lynx pilot has to operate even more self-reliantly than a pilot of an Orion. Of course the selectors can test this item during the interview, but it seemed wiser to assess this ability on the basis of the impression of the instructors of the basic flying instructions and on the motivation of the candidates. The reason for this is dual:

1. Only after the basic training the decision is made who is going to the helicopter training and who is going to follow the training for the fixed wing aircraft.

Till then the basic training is the same for both categories. After the basic training the instructors, together with the candidate, decide who is going to which aircraft training. Though in this decision the interest of the organisation is put before the wishes of the candidates. When, for instance, there is a need for Orion pilots all candidates have to follow the 'Orion-course'.

2. The period between the first interview and the time -after the basic training- when the decision is made, takes 18 months on average. During this time a candidate (certainly the younger ones) can become much more independent.

How does our selection procedure work.

1. Function profile Pilot Lynx and Orion

- attention spreading selective listening test (SLT) and a multi-tasking assignment (MTT)
- establishing priorities interview, MTT
- team-spirit interview, question list on personality traits, MTT
- social skills interview, question lists on personality traits
- decision-making instrument interpretation, SLT, MTT (all tests with a time pressure element)
- quickness of reaction steering task
- independence interview, observation

- flexibility interview, question list on personality traits, steering task and MTT
- assertiveness interview, question list on personality traits
- handling increasing pressure MTT
- not having a tunnel vision steering task
- flying techniques steering task

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Afterwards all these skills and personality traits are tested in a simulator and a Slingsby, during the practical selection. All the practical tests are validated on (based on the criteria of) the simulator and the practical pilot selection.

Explanation of the tests:

- **The interview: its average duration is two hours.**

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In addition to a number of standard questions, inquiries will be made during this interview about the personality traits that are of particular importance for the function in question (such as the characteristics that have been mentioned in the working group and/ or in a job analysis.

- **Personality question lists**

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These lists measure particular aspects of the personality and are used to back up the interview results. Do the characteristics as they were found correspond to each other? Characteristics that are measured are for instance: rigidity, social skills, the tendency to feel wronged, dominance, self-appreciation, introversion versus extraversion, and so on).

- **Instrument interpretation**

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The assignments of this test consist of an artificial horizon (attitude) and a compass (course) which indicate the position of an aeroplane. From five possibilities (pictures of aeroplanes in particular positions) the candidate has to choose the position that fits in with the given attitude and course.

- **Selective listening test**

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During the selective listening test the candidates hear several messages at the same time through a pair of headphones. It is their task to listen with one ear and to ignore the messages entering the other ear. Signals via the headphones indicate which ear the candidate has to focus on.

- **Steering assignment**

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This assignment measures the candidate's aptitude for steering. With a joystick and a foot-operated control wheel the candidate must try to manoeuvre in such a way that a spot of light (on the computer screen) remains at the

intersection of a co-ordinate system.

- **Multi-tasking assignment**

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This is an assessment exercise which measures the capacity for doing a lot of things at the same time. The candidate acts as a safety officer at a kind of railway system. From headquarters he can, in consultation with his 'second man' (played by a psychologist), monitor and activate the transport system with its various kinds of wagons. He has a number of tasks. Firstly, to intervene in unsafe situations. (These are numerous, all requiring different solutions). Secondly, to see to it that enough trains are running (and a lot can go wrong in this respect). In addition to this he must keep communicating, consulting with and delegating to the man beside him.

- **Simulator test**

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This test consists of six test flights, in which many aspects of instrument flying play a part, and a training flight, in which all the difficult elements from the test flights are brought together. The total duration of this test is four days. In addition to the scoring by the computer an observational report is written by the flying instructor who supervises the flight. Not only the candidate's achievements in the area of flying technique are registered in this report, but also his coping behaviour.

- **Practical pilot selection**

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The test consists of six flights with a single-engined training aeroplane. Each flight is to be carried out according to an established pattern. The first flight is a training flight. The flights are practically similar to the flights the candidate has had to carry out in the simulator. In total the test takes up five days and it is to measure two things:

- The reproduction, under real flying conditions, of the aptitude for flying as shown on the simulator.

- Medico-psychological aspects such as susceptibility to airsickness, G-tolerance etc.

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- **Selection advisory committee**

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This is a committee of five experienced officers, at least one of whom comes from the specific job area for which the candidate applies. During an interview of about 30 minutes they consider whether in their view the candidate would be able to function not only as a good pilot, but also as a good officer of the Royal Netherlands Navy. They pass the final judgement, but in practice, candidate pilots who have reached this stage are seldom rejected by this committee.

What has changed in the selection procedure?

1. The selection is now made on the basis of personality traits and job profiles that are partly new (and which have been brought forward in the working group and by air personnel).
2. Selection is more often based on pass/fail decisions as opposed to a compensation model.

3 The selection procedure has become shorter (which is to the advantage of the candidates and reduces the waiting time).

4. A number of 16 tests have been removed from the procedure or been replaced by tests that are more up to date. Among the test that have been removed are intelligence tests (since for many jobs a particular level of education is required anyway), question lists about swimming skills (these have only been continued for the function of heli rescuer in the Lynx), a number of personality question lists and a number of lists concerning phobias.

5. A number of tests have been added to the procedure, because there was a call for characteristics which previously had not required such specific measuring (think for instance of multi-tasking).

Questions:

1. In the Netherlands all practical tests are validated on the flight simulator and the practical pilot selection. Is this the same in other countries?
2. Is there, in other countries, any difference between the selection procedures for pilots for the 'fixed wing' and the helicopter respectively?
3. How is it in other countries determined which pilots go to the 'fixed wing' and which ones to the helicopter?
4. Do other countries also use both flight simulators and practical pilot selection, or only one of the two?
5. How are the selection procedures built up and revised in other countries?

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